

FILE 'REGISTRY' ENTERED AT 12:28:57 ON 03 APR 2006

E 1,1,1,3,3-PENTAFLUOROBUTANE

L1 1 S 1,1,1,3,3-PENTAFLUOROBUTANE/CN

E HYDROGEN FLUORIDE

L2 1 S HYDROGEN FLUORIDE/CN

L3 1 S L2

FILE 'CAPLUS, CAOLD' ENTERED AT 12:31:19 ON 03 APR 2006

L4 389 S L1

FILE 'REGISTRY' ENTERED AT 12:32:04 ON 03 APR 2006

L5 1 S L1

L6 1 S L1 FUL

FILE 'CAPLUS, CAOLD' ENTERED AT 12:32:30 ON 03 APR 2006

L7 25 S L4 AND L2

L8 3 S L7 AND ?AZEOTROP?

L9 40219 S L2

L10 25 S L4 AND L2

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L8 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:946166 CAPLUS

DN 138:26367

TI Separation of pentafluorobutane-HF **azeotrope** mixtures for recovery of 1,1,1,3,3-pentafluorobutane as potential novel refrigerants, aerosol propellants, polymer blowing agent, and cleaning solvent.

IN Pham, Hang T.; Singh, Rajiv R.; Tung, Hsueh S.

PA Honeywell International Inc., USA

SO PCT Int. Appl., 12 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002098529	A1	20021212	WO 2002-US17246	20020603
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2003009065	A1	20030109	US 2002-160673	20020603
	US 6673264	B2	20040106		
	EP 1425076	A1	20040609	EP 2002-737315	20020603
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	CN 1549739	A	20041124	CN 2002-810803	20020603
	JP 2005503249	T2	20050203	JP 2003-501565	20020603
	US 2004084295	A1	20040506	US 2003-684786	20031014
PRAI	US 2001-295049P	P	20010601		
	US 2002-160673	A3	20020603		
	WO 2002-US17246	W	20020603		

AB An **azeotrope**-like composition, consisting of 1,1,1,3,3-pentafluorobutane (HFC-365mfc) and HF, has a vapor pressure of 15-22 psia at 20.2° and 29-36 psia at 40.2°, and a preferred composition of 90-96 weight% HFC-365mfc and 4-10 weight% HF. The separation of HFC-365mfc from HF can be carried out in two steps: (1) distilling the **azeotropic** mixture at a first pressure to produce a first overhead stream enriched in either HFC-365mfc or HF and a first bottoms stream enriched in the other component, followed by (2) redistg. the first overheads at a second pressure to produce a second overheads enriched in the component enriched in the first bottoms stream, and a second bottoms stream enriched in the component enriched in the first overheads. The **azeotropic** compns. at 20.2° and 40.2° are 96:4 and 92:8 weight% ratio HFC-365mfc-HF, resp. HFC-365mfc is useful as a nontoxic, zero-ozone-depleting fluorocarbon which can be used as a solvent, blowing agent, refrigerant, cleaning agent, and propellant for sprays and aerosols.

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:686280 CAPLUS

DN 133:254211

TI Distillation process for the separation of mixtures containing hydrogen fluoride and 1,1,1,3,3-pentafluorobutane and hydrofluorination process for the preparation of 1,1,1,3,3-pentafluorobutane from chlorofluorobutanes and hydrogen fluoride

IN Reif, Ferdinand; Balthasart, Dominique

PA Solvay & Cie (Societe Anonyme), Belg.

SO Eur. Pat. Appl., 8 pp.

CODEN: EPXXDW

DT Patent
LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1038857	A1	20000927	EP 2000-200976	20000316
	EP 1038857	B1	20040818		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	FR 2791976	A1	20001013	FR 1999-3918	19990324
	FR 2791976	B1	20010727		
	AT 273946	E	20040915	AT 2000-200976	20000316
	ES 2226700	T3	20050401	ES 2000-200976	20000316
	US 6540882	B1	20030401	US 2000-533425	20000322
	JP 2000281602	A2	20001010	JP 2000-81468	20000323
PRAI	FR 1999-3918	A	19990324		

OS MARPAT 133:254211

AB Mixts. containing 1,1,1,3,3-pentafluorobutane (I) and hydrogen fluoride (II) are separated by ≥ 2 distillation steps where the first distillation is conducted at a pressure higher than the second distillation and in which a I-enriched product is obtained as the bottoms product of the first distillation unit and a II-enriched product is obtained as the bottoms product from the second distillation unit. I is prepared by the II-hydrofluorination of chlorofluorobutanes $\text{CCl}_a\text{F}_3-\text{aCH}_2\text{CCl}_b\text{F}_2-\text{bCH}_3$ ($a = 0-3$; $b = 0-2$; where $a + b = \geq 1$); a process flow diagram is presented..

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:441737 CAPLUS

DN 133:60376

TI Methods for separating a mixture comprising at least an hydrofluoroalkane and hydrogen fluoride and methods for preparing a hydrofluoroalkane

IN Lambert, Alain; Wilmet, Vincent

PA Solvay (Societe Anonyme), Belg.

SO PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DT Patent

LA French

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000037401	A1	20000629	WO 1999-EP10173	19991216
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2355385	AA	20000629	CA 1999-2355385	19991216
	BR 9916345	A	20011002	BR 1999-16345	19991216
	EP 1140747	A1	20011010	EP 1999-967969	19991216
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002533302	T2	20021008	JP 2000-589475	19991216
	AU 769820	B2	20040205	AU 2000-24333	19991216
	RU 2261856	C2	20051010	RU 2001-119986	19991216
	TW 499407	B	20020821	TW 1999-88123242	19991227
	ZA 2001004829	A	20020613	ZA 2001-4829	20010613
	US 6521803	B1	20030218	US 2001-868368	20010717
	US 2003060671	A1	20030327	US 2002-282785	20021029
PRAI	BE 1998-910	A	19981218		
	WO 1999-EP10173	W	19991216		
	US 2001-868368	A3	20010717		

AB The invention concerns a method for separating a mixture comprising at least a hydrofluoroalkane and hydrogen fluoride, which consists in reacting a

hydrofluoroalkane-HF mixture with at ≥ 1 chlorinated or chlorofluorinated precursor of hydrofluoroalkane. The invention also concerns a method for preparing a hydrofluoroalkane comprising such separation, combined with a catalytic reaction step. The invention further concerns **azeotropic** compns. of hydrofluoroalkane and HF which are broken by this method.

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT